Wooded hills, Pa. to Mont. and Mo.

Bromus incanus (Shear), comb. nov.

B. purgans incanus Shear. 1900. l. c. p. 41.

Wooded hills, Pa. to Va., S. D. and Tex.

Elymus striatus var. **arkansanus** (Scribn. & Ball), comb. nov.

E. arkansanus Scribn. & Ball. 1900. U. S. Dep. Agric. Div. Agrost. Bul. **24**: 45.

Wooded hills, Md. to Ia. and southw.

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SOME MAINE RUBI. THE BLACKBERRIES OF THE KENNEBUNKS AND WELLS,— III.

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IN this concluding paper the *Hispidus* and *Setosus* classes of blackberries are taken up, two new species and one new variety are described, and some of their variations are mentioned under names suggested by the now popular explanations of plant variations.

RUBUS HISPIDUS L. (*R. sempervirens* Bigelow, *R. obovalis* Michx. *R. obovatus* Persoon.) Plants normally perfectly prostrate; stems very slender, small at the base, beset with few to very numerous slender mostly reflexed bristles, some of the smaller generally tipped with small glands; branching freely and tipping vigorously. Leaves on new canes 3-foliate or often in this section 5-foliate, thick, smooth, shining, remaining in favorable places till spring, stipules often large; leaflets broadly obovate with a very short point or none, 1 to 1½ in. long, often 2 in., crenate-dentate, variants often serrate and pointed. Growth on old canes erect, leafy, nearly glabrous; leaves 3-foliate, probably never normally 5-foliate; leaflets thick, broad and rounded; inflorescence slender, more or less racemose; bristles very weak or none, unifoliate leaves few and broad; flowers very variable in size, ⅝ in. to 1 in. broad or sometimes very large; petals generally broad, often very narrow; blossoming and fruiting very late; fruit generally small and sour, but in favorable places often ⅜ in. in diameter and quite edible. Abundant in all parts of this section, dry or moist ground, shade or sun.

The popular impression seems to be that this is a very weak plant

and the herbaria collections mostly are such, but it is often of a very robust nature especially in elevated situations and on bleak shores. These forms seem to make it desirable to have them segregated as a variety.

Var. **major,** n. var. Plants much larger in every way, the stem often densely covered with rather strong bristles, leaves much larger, leaflets on new canes often 3 in. long, frequently pointed and serrate, sometimes narrow; varying in a similar manner on the old canes. Tendency to climb over bushes much greater.

RUBUS SETOSUS Bigelow. (*R. nigricans*, Rydberg.) Plants with the *new canes* generally erect, sometimes decumbent, 1½ to 3 ft. high or often 4 ft.; stems seldom branched, terete or slightly angled, thick at the base and soft, clothed with numerous bristles varying from 200 soft ones to 100 or less strong ones to the inch of stem, the former set at a right angle to the stem and the latter strongly retrorse, more or less of the smaller bristles and hairs bearing small glands at the end. Leaves often large, 4 in. wide, varying from light yellow-green to dark green, not thick but firm, nearly or quite glabrous, a few appressed hairs above and some close pubescence below not rare, mostly 5-foliate, a few of the lower leaves 3-foliate; leaflets oval or rhomboidal, rather cuneate and well pointed; serrate, or serrate-dentate toward the points, the middle one about 3 in. long and 1¾ in. wide, the others similar in shape but smaller; petiole and petiolules resembling the stem in bristles and glands, the petiolule of the middle leaflet ¾ of an inch long, the side ones shorter and the basal leaflets sessile.

Old canes often decumbent or prostrate, badly killed back especially on large canes, bristles generally much impaired. Second year's growth consisting of leafy erect or upward spreading fruit branches tipped with a racemose often branched inflorescence; branches very variable in length, generally one from each old leaf-axil or several from the upper if badly killed back. Axis seldom straight, weakly armed or merely hispid; leaves 3-foliate or part of them 5-foliate; leaflets pointed at each end, varying from narrow to wide, serrate-dentate; in texture and color much like those on new canes. Unifoliate leaves few none or rarely many. Pedicels and calyx lobes generally hispid often densely so with abundant glanded hairs, or sometimes nearly naked. Flowers appearing very late rather showy, 1 in. broad more or less, petals usually narrow, less than one-half as wide as long. Fruit ripening late globose, small and sour, or often quite large and edible.

Grows everywhere in these towns, the rankest plants in the richest and most favored spots. Farther south and in less exposed places it seems to be most at home in moist situations.

Dr. Rydberg's *R. nigricans* is a synonym for this species and the injection of this name has tended to make confusion. There are

extant three very meagre specimens sent out by Dr. Bigelow evidently taken from the same plant which he says grew in a swamp in Sudbury, Mass. Dr. Rydberg assumes that these three specimens belong to a species distinct from the great mass of what is known as *R. setosus* which he by this process makes nameless and proceeds to name. The writer in August, 1906, gathered this species from about a dozen stations in Sudbury each different from the others and varying as much or more from each other as they do from Dr. Bigelow's. This species is variable but the variations are not deep. If these slight variations are to be considered as specific there is no end to the species that can be made from them. His specimens and his description will probably satisfy botanists, acquainted with this species in its haunts, that this plant may properly still be known as *R. setosus* Bigelow.

Rubus tardatus, n. sp. Plants slightly glandular, very late in starting and fruiting, decumbent, seldom branched tending to be prostrate and entirely so the second year, tipping vigorously; stems terete, hard, with numerous strong bristle-prickles; leaves quinate, leaflets narrow, dark green, thick, smooth and somewhat leathery. Some of the leaves on the fruit branches often quinate.

New canes. Stems decumbent, tending to be prostrate, seldom branched, brown, hard, 3 to 6 ft. long, tipping vigorously in September; pith slightly pentagonal; proper pubescence on the stem none, a few or numerous red-glanded hairs, commonly present. Prickles varying from spiny ones to strong bristles, $\frac{1}{8}$ in. long, 25 to 30 to the inch of stem, set at random. Leaves large, 5-foliate, large ones 7 in. long by 6 in. wide, thick, leathery, very dark green and perfectly glabrous on the upper surface, pubescence close on the lower surface or wanting, not appreciable to the touch. Leaflets long oval to obovate, outline entire, narrowly cuneate and rather long-pointed, entire at the base, serrate then serrate-dentate above. Petiole and petiolules slender, yellowish, glabrous save a few glanded hairs, well grooved, prickles long, slender, straight; the petiolule of the middle leaflet $\frac{1}{2}$ in. long, the side ones short, and the basal leaflets sessile.

Old canes. Stems prostrate, slightly killed back, prickles somewhat broken. Growth of second year consisting of erect leafy branches or stemlets, 7 in. to 1 foot high, one from each old leaf-axil. Axis nearly straight, glabrous, prickles few and weak. Leaves in color and texture like those on new canes, 3-foliate or often the lower 5-foliate the upper unifoliate; leaflets often 2 in. long, generally narrow, long-cuneate, pointed, singly serrate, the middle one short-stalked. Inflorescence occupying about one-fourth of the axis a simple raceme, 8 to 12 flowers, subtended by small bracts and unifoliate leaves, pedicels and peduncle with numerous glanded hairs. Flowers, appearing first about the 10th of July, about one inch broad, petals one-half as

wide as long, often more than five. Sepals glanded. Fruit globose of 3 to 21 drupelets, the best fruit about $\frac{1}{4}$ in. in diameter, rather sour.

Type stations: The west road from Kennebunk village to West Kennebunk, Maine. Abundant in Wells, Kennebunk and Kennebunkport. Also in North Berwick.

This species is a dewberry and has many of the characters of *R. hispidus* and *R. setosus* though they are not very apparent when casually examined. The texture and color of the leaves, thick and dark green, indicate the former; but they are not evergreen or shiny and are 5-foliate both on the new canes and often also on the old ones, narrow, serrate and pointed as in the latter. In many other respects the characters are similarly mixed, but the hard stem and stout prickles are to be found in neither.

Rubus junceus, n. sp. Plants with a flimsy look, erect the first year, weak, soft-stemmed, often prostrate the second year, glandless except on the inflorescence, prickles weak, leaves thin, 5-foliolate, flowering early.

New canes. Stems upright, thick at the base, weak, very soft, dark red, angled, 2 to 3 ft. high, rarely branched, glabrous and glandless, armed with straight, retrorse, slender bristle-prickles $\frac{1}{8}$ in. long, 10 to 20 to the inch of stem, not noticeably in lines. Leaves 5-foliate, flimsy-looking, thin light yellow-green, slightly hairy on the upper surface, considerably pubescent beneath. Leaflets oval, pointed at each end, coarsely, unevenly and doubly serrate-dentate, the middle leaflet broad, nearly rhombic, 3 in. long by 2 in. wide, the side ones similar but narrower and the basal ones quite narrow. Petiole and petiolules very slender, glabrous, grooved, retrorse bristles slender, the petiolule of the middle leaflet $\frac{3}{4}$ in. long, the side ones nearly one-half as long and the basal leaflets sessile.

Old canes. Stems often prostrate, prickles nearly intact or often all wanting. New growth consisting of erect leafy fruit branches 6 in. to 1 foot high, one from each old leaf-axil. Axis glabrous, unarmed, slightly zigzag. Lower leaves 3-foliate, none 5-foliate, resembling those on new canes, the upper ones unifoliate and becoming regularly smaller. Inflorescence occupying about one-fourth of the branch, racemose, covered with many red-glanded hairs, pedicels slender, about 12, subtended by the unifoliate leaves and leaflike bracts. Flowers appearing late in June about $1\frac{1}{8}$ in. broad, petals nearly twice as long as broad, sepals with numerous glanded hairs. Fruit ripe after the middle of August, mostly small, globose; one of the best $\frac{1}{2}$ in. in diameter with 14 drupelets each $\frac{3}{16}$ in. in diameter.

Type stations: Kennebunk depot yard; the direct road from the depot to the shoe-shop; the west road from Kennebunk village to Parsons station and the road to Wells Branch. Abundant in most parts of Kennebunk, Kennebunkport and Wells. Dry ground, open sun and light shade.

This very abundant species has some resemblance to *R. setosus*, enough perhaps to justify placing it in that class. Its red stem nearly naked the second year, flimsy delicate appearance, and early flowering easily distinguish it from that species.

There are in this section many other forms which may be considered as hybrids, mutants, variants or aberrant forms according to the botanist's way of looking at these subjects.

RUBUS HISPIDUS × SETOSUS. These are mostly prostrate or nearly so but they do not like *R. hispidus* branch, tip, nor preserve their leaves through the winter, while they are 5-foliate. Frequent. No two alike.

RUBUS HISPIDUS × SEMIERECTUS. Rare, found in but two or three places.

RUBUS HISPIDUS × BIFORMISPINUS. This was found in but one place and both the species were growing near.

Several other very distinct forms grow here. One is a dwarf "high" blackberry 1 to 2 feet high, remarkably fruitful, growing in the woods. Another belongs to the *Setosus* class, while a third though common fruits so little as to give little chance to study it. Should they prove to be abundant and widespread names will be in order. What the writer regards as the essentials of a species is not merely distinct characters, but the form must be sufficiently abundant and widespread. Sports frequently have sharper characters than any species.

SUPPLEMENTARY NOTES ON THE THREE PRECEDING PAPERS.

During the present season the writer has done a good deal of work on Rubus in Rhode Island and in Massachusetts especially in the southeastern part. As some of the plants described in these papers as new species have been found in additional localities, it seems worth while to append the following notes in regard to them:— *Rubus Arundelanus* is abundant on the highway from Marblehead to Swampscott. *R. recurvicaulis* is also abundant in hedges in the neighborhood "Cow Fort" in Marblehead. *R. geophilus* occurs in the northern part of New Bedford and in Plymouth near Manomet. *R. plicatifolius* was found in Burrillville, R. I., and in Palmer and Munson, Mass. *R. arenicolus* was very plenty in pastures in Stoughton and several miles away in Canton. *R. semierectus* occurred abundantly by the road from Westvale in Concord to the Wayside Inn in Sudbury, and in Arlington near the standpipe. *R. Arundelanus* and

R. Jeckylanus belong to the *Frondosus* class. *R. frondosus* seems to deserve notice here.

RUBUS FRONDOSUS Bigelow. This fine species, which was described eighty years ago and which is very abundant about Boston, seems never to have been recognized and there are few herbarium specimens extant. One is a short undeveloped fruit branch in bud sent by Dr. Bigelow to Dr. Torrey in 1823. In the letter accompanying it he characterized it much as in his description published soon after in the second edition of his "Florula Bostoniensis." This letter is preserved at the New York Botanical Garden. A second specimen is a fruit branch in flower collected recently by Mr. W. P. Rich. A third is also a flowering branch collected recently on the Arboretum grounds at Jamaica Plain. These two are preserved in the Arboretum herbarium. The writer had assumed that the Boston botanists had secured the common plants in that section and not till late in August (1906) did he look around there. The species in question was soon found at Cobb Corner in Sharon and near Sharon Heights. Afterwards it was observed at the following stations: Canton, Arlington, Lexington, Medford, Winchester, Stoneham, Belmont, Sudbury, Framingham, Wayland, Clinton, and Milton. It is especially abundant on the hill between Arlington village and Lake Mystic, and in Clinton two miles south of the Wachusett dam in the pastures bordering the east side of the reservoir near the Electric Railroad. It is to be distinguished at sight from the other "high bush" blackberries by its strong, round stem, abundant long recurving branches which touch and lie upon the ground but do not appear to tip, leaves thick, roughly pubescent, leaflets very broad, the middle one only stalked. The old cane preserves its leaves till autumn the fruit ripening early and falling while all the leaves even on the inflorescence remain. The inflorescence is a close cyme with many of the pedicels subtended by broad leaves. No name could be more appropriate. It is occasional in Connecticut and Rhode Island.

RUBUS ALLEGHANIENSIS Porter. (*R. nigrobaccus* Bailey, *R. villosus* Gray's Manual in part.) There are two very common, very characteristic and very different species of high blackberries in the eastern part of the United States. They constitute the bulk of the high blackberries from Maine to New York and south to North Carolina. They encroach very little on each other's territory. One is a northern plant with a delicious spicy flavor to be compared only with the straw-

berry, the plant that Dr. Porter named *R. Alleghaniensis* and Prof. Bailey later named *R. nigrobaccus*. Its range is from northern New England and New York (except at considerable elevations where *R. Canadensis* holds sway, *R. pergratus* in some places occurring also) to the low coast (beginning near Boston) and the adjacent valleys and sand plains. It extends to Northern New Jersey, occurs in spots in Southeastern Pennsylvania, and seems to be frequent in the Pocono Mountains.

The other which is a more southern plant has its northern limit at an elevation of about 200 feet in Connecticut and Rhode Island occupying about one-fourth of Connecticut and one-half of Rhode Island. It follows the coast and sand plains of Massachusetts to Boston. This is *R. Andrewsianus* described by the writer in RHODORA, Jan., 1906. As it occurs in Southington, Connecticut, it bears very poorly but nearer the coast and in Pennsylvania, New Jersey and Virginia it is an abundant bearer. The fruit is large, the drupelets loose and large. The fruit is sweet but not aromatic. Where the two species overlap this is much the earlier and seems to be the parent of most of the cultivated forms.

This information the writer has obtained by personal search, though an examination of several private herbaria and those of Brown University, Yale University, New York Botanical Garden, Philadelphia Academy of Sciences and the National Herbarium at Washington have confirmed it.

It appears that when Dr. Porter found *R. Alleghaniensis* it was so different from what he had called *R. villosus*—the plant now named *R. Andrewsianus* that he published it as a variety and later as a species. Note his description. "It differs from *R. villosus* in being less robust and tall but especially in the character of the fruit which is smaller, scarcely fleshy and possessed of a peculiar spicy flavor from $\frac{1}{3}$ to 1 in. or more in length and often oblong and tapering toward the end in the manner of the little finger." Prof. Bailey would hardly have published *R. nigrobaccus* if he had known the plant Dr. Porter called *R. villosus*. He hesitated, as it was, thinking Dr. Porter's name might be correct. There seems, however, to be no doubt that Dr. Porter was the first to segregate our spicy blackberry, and that its name should be *R. Alleghaniensis*.

WESTMINSTER, VERMONT.